AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/582,913

Attorney Docket No.: Q79149

**AMENDMENTS TO THE CLAIMS** 

This listing of claims will replace all prior versions and listings of claims in the

application:

**LISTING OF CLAIMS:** 

1. - 25. (canceled).

26. (currently amended): A gallium nitride-based compound semiconductor light-

emitting device comprising an n-type semiconductor layer of a gallium nitride-based compound

semiconductor, a light-emitting layer of a gallium nitride-based compound semiconductor and a

p-type semiconductor layer of a gallium nitride-based compound semiconductor formed on a

substrate in this order, and having a negative electrode and a positive electrode provided on the

n-type semiconductor layer and the p-type semiconductor layer, respectively; wherein the

negative electrode comprises a bonding pad layer, -and-a contact metal layer which is in contact

with the n-type semiconductor layer, and an Au-Sn alloy layer or a lead free solder layer which is

provided on the bonding pad layer, and wherein the contact metal layer is composed of a Cr-Al

alloy which has a Cr content of 20 to 80 mass%.

27. (canceled).

28. (canceled).

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29. (currently amended): A gallium nitride-based compound semiconductor light-

emitting device according to claim-28\_26, wherein the Cr-Al alloy has a Cr content of 40 to 60

mass%.

30. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the contact metal layer has a thickness of 1 to

500 nm.

31. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 30, wherein the contact metal layer has a thickness of 10 nm

or more.

32. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the bonding pad layer is formed of a metal

selected from the group consisting of Au, Al, Ni, and Cu, or an alloy containing the metal.

33. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the bonding pad layer has a thickness of 100 to

1,000 nm.

34. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 33, wherein the bonding pad layer has a thickness of 200 to

500 nm.

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35. (canceled).

36. (currently amended): A gallium nitride-based compound semiconductor light-

emitting device according to claim-35 26, wherein the Au-Sn alloy layer has a thickness of 200

nm or more.

37. (canceled).

38. (currently amended): A gallium nitride-based compound semiconductor light-

emitting device according to claim-37.26, wherein the lead free solder layer has a thickness of

200 nm or more.

39. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the light-emitting device has an adhesion layer

formed of Ti between the contact metal layer and the bonding pad layer.

40. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 39, wherein the adhesion layer has a thickness of 1 to 100

nm.

41. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 40, wherein the adhesion layer has a thickness of 10 nm or

more.

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42. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the light-emitting device has a barrier layer

between the contact metal layer and the bonding pad layer.

43. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 35, wherein the light-emitting device has a barrier layer

between the bonding pad layer and the Au-Sn alloy layer.

44. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 37, wherein the light-emitting device has a barrier layer

between the bonding pad layer and the lead free solder layer.

45. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 42, wherein the barrier layer is formed of a metal selected

from the group consisting of Ti, Zr, Hf, Ta, W, Re, Os, Ir, Pt, Fe, Co, Ni, Ru, Rh, and Pd, or an

alloy containing the metal.

46. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 45, wherein the barrier layer is formed of a metal selected

from the group consisting of Ti, Ta, W, and Pt, or an alloy containing the metal.

47. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 42, wherein the barrier layer has a thickness of 10 to 500 nm.

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48. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 47, wherein the barrier layer has a thickness of 50 to 300 nm.

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49. (previously presented): A gallium nitride-based compound semiconductor light-

emitting device according to claim 26, wherein the light-emitting device is of a flip-chip type.

50. (previously presented): A negative electrode for use in a gallium nitride-based

compound semiconductor light-emitting device comprising a bonding pad layer and a contact

metal layer which is in contact with the n-type semiconductor layer, wherein the contact metal

layer is composed of a Cr-Al alloy.

51. (previously presented): A negative electrode for use in a gallium nitride-based

compound semiconductor light-emitting device according to claim 50, wherein the light-emitting

device is of a flip-chip type.